FORESTRY ABSTRACTS

VOLUME 23. 1962.

Prepared by
COMMONWEALTH FORESTRY BUREAU, OXFORD

Published by
Commonwealth Agricultural Bureaux, Farnham Royal, England

© Commonwealth Agricultural Bureaux, 1962

Printed in Great Britain at the Works of
W. HEFFER & SONS LTD., CAMBRIDGE, ENGLAND

FORESTRY ABSTRACTS

READERS' GUIDE SHEET

1.—New readers are reminded of the *Guide to the Use of Forestry Abstracts* which will enable them to get the maximum value from the Abstracts. *See inside back cover.*

2.—Terms appearing in the *Concise Oxford Dictionary* and Chambers's *Technical Dictionary* are ordinarily used in the text without explanation. The *British Commonwealth Forest Terminology* is followed for forestry terms.

3.—From Vol. 18 of the Abstracts up to THREE co-authors' names are cited in titles; if there are more than three, only the first, followed by *et al.*

4.—**Abbreviations.** The more common of those most likely to cause the reader difficulty are given below:—

(*a*) In title citations—

abstr.	= abstract	*n.d.*	= no date	*ser.*	= series
app.	= appendix(es)	*n.s.*	= new series	smry.	= summary
dgm(s).	= diagram(s)	ref(s).	= reference(s)	*suppl.*	= supplement
Extr. (from)	= extract	*repr.*	= reprint	tbl(s).	= table(s)
gph(s).	= graph(s)	rev.	= revised	transl.	= translation

From Vol. 18 also, any *italicized* language abbreviation(s) indicate matter in that language additional to any summary, e.g. [Jap.e.*e.*] where English captions to graphs, tables etc. exist.

(*b*) In text—

A.C.	= alternating current	gal.	= gallon(s)	p.a.i.	= periodic annual increment
b.a.	= basal area	H.F.	= high frequency	p.p.m.	= parts per million
bd. ft.	= board foot (feet)	H.ft.	= Hoppus feet	q.g.	= quarter girth
b.h.	= breast height	h.p.	= horse-power	R.F.	= radio frequency
b.p.	= boiling point	hr.	= hour(s)	rev./min.	= revolutions per minute
c.a.i.	= current annual increment	H.T.	= high tension	*s.l.*	= *sensu lato*
c.c.	= cubic centimetre	ht.	= height	sp.gr.	= specific gravity
c.i.f.	= cost, insurance, freight	KVA.	= kilovolt-ampere(s)	sq.	= square
conc.	= concentrated (solutions)	KWH.	= kilowatt-hour(s)	*s.s.*	= *sensu stricto*
cwt.	= hundredweight(s)	lb.	= pound(s) (weight)	std.	= standard(s) (timber measure)
d.b.h.	= diameter, breast height	m.a.i.	= mean annual increment	u.b.	= under bark
D.C.	= direct current	m.p.	= melting point	V.H.F.	= very high frequency
f.o.b.	= free on board	m.p.h.	= mile(s) per hour	viz.	= *videlicet*
g.b.h.	= girth, breast height	o.b.	= over bark	wt.	= weight
		oz.	= ounce(s)	yd.	= yard(s)
		p.a.	= per annum		

In abstracts relating to the U.S.S.R.—

'CNII lesosplava'	= Central Timber-floating Research Institute	UkrNIIMOD	= Ukrainian Research Institute for the Mechanical Conversion of Wood
CNIIFM	= Central Plywood and Furniture Research Institute	VIAM	= All-Union Research Institute for Aircraft Materials
CNIIMĖ	= Central Research Institute for Mechanization and Electrification in Forest Exploitation	VNIALMI	= All-Union Research Institute for Forestry in Agricultural Improvement
CNIIMOD	= Central Research Institute for the Mechanical Conversion of Wood	VNIILM (formerly VNIILH)	= All-Union Research Institute for Forestry and Forestry Mechanization
CNILHI	= Central Research Institute for Forest Chemistry		

Also *F.A.* = Forestry Abstracts.

[P.T.O.

5. **Local measures—**

arroba (Brazil, Portugal) = 15 kg.
chain = 66 ft.
cho (Japan): 1·000 cho = 2·451 acres
donum (Cyprus) = 0·333 acre
dunam (Israel) = 0·247 acre
feddan (Arabia) = 1·038 acres
hold (Hungary) = 1·43 acres
koku (Japan): 1·000 koku = 9·827 cu. ft.
maund (India) = $82\frac{2}{7}$ lb.
morgen (S. Africa) = 2·116 acres
mu (China) = 0·152 acre = 0·061 ha.
oke (Greece) = 2·8 lb.
pikul (Malaya) = 100 katis = $133\frac{1}{3}$ lb.
rai (Thailand) = 0·40 acre
short ton = 2000 lb.
stremma (Greece) = 0·247 acre
tan (Japan): 1·000 tan = 0·245 acre
U.S. gallon = 0·84 English gal.

COMMONWEALTH AGRICULTURAL BUREAUX

EXECUTIVE COUNCIL

Member	*Representing*
V. Armstrong, Ph.D. (Chairman)	New Zealand
W. G. Alexander, C.B.E. (Vice-Chairman)	United Kingdom
J. G. Malloch, M.B.E., Ph.D.	Canada
P. F. Butler	Australia
A. M. D'Rozario, Ph.D.	India
C. Kemal Reheem	Pakistan
H. E. Seneviratne	Ceylon
J. A. Afari	Ghana
Yusoff Bin Zainal	Federation of Malaya
P. Ogwuazor	Federation of Nigeria
H.E. The High Commissioner for Sierra Leone	Sierra Leone
J. E. C. Coventry	Federation of Rhodesia and Nyasaland
W. A. C. Mathieson, C.M.G., M.B.E.	Dependent Territories

Secretary: Sir Thomas Scrivenor, C.M.G., Farnham Royal, Bucks.

LIAISON OFFICERS

United Kingdom:
W. E. Berry, B.Sc., Ph.D., Agricultural Research Council, Cunard Building, 15, Regent Street, London, S.W.1.

Canada:
G. M. Carman, B.S.A., M.Sc., Ph.D., Chief, Scientific Information Section, Research Branch, Canada Department of Agriculture, Central Experimental Farm, Ottawa, Ontario.

Australia:
W. Ives, M.Ec., Commonwealth Scientific and Industrial Research Organization, 314, Albert Street, East Melbourne, C.2, Victoria.

New Zealand:
I. L. Baumgart, B.A., B.Sc., Department of Scientific and Industrial Research Information Bureau, P.O. Box 8018, Government Buildings, Wellington, C.1.

India:
V. Shankar, I.C.S., Special Secretary, Ministry of Food and Agriculture, Department of Agriculture, New Delhi.

Pakistan:
Taskhir Ahmad, Ph.D. (Cantab.), Director, Department of Plant Protection, Block 52, Pakistan Secretariat, Karachi.

Ceylon:
R. W. Wikramanayake, C.C.S., Assistant Secretary to Government, Ministry of Agriculture, Land, Irrigation and Power, Galle Face Secretariat, Colombo 1.

Ghana:
Principal Secretary, Ministry of Agriculture, P.O. Box M.37, Ministry Branch Post Office, Accra.

Federation of Malaya:
Secretary to the Ministry of Agriculture, Federation of Malaya, Swettenham Road, Kuala Lumpur.

Federation of Nigeria:
Director of Agricultural Research, Department of Agricultural Research, Moor Plantation, Ibadan.

Sierra Leone:
Principal Agricultural Officer (Research), Agricultural Department, Njala.

Federation of Rhodesia and Nyasaland:
G. R. Bates, Ph.D. (London), Chief Botanist and Plant Pathologist, Department of Research and Specialist Services, P.O. Box 8100, Causeway, Salisbury, Southern Rhodesia.

Dependent Territories:
Sir Geoffrey Nye, K.C.M.G., O.B.E., B.Sc. (Agr.), C.D.A., Agricultural Adviser to the Secretary for Technical Co-operation, Sanctuary Buildings, Great Smith Street, London, S.W.1.

Republic of the Sudan:
Chief, Agricultural Research Division, Ministry of Agriculture, Gezira Research Farm, Wad Medani.

Republic of Ireland:
M. O'Doherty, Department of Agriculture (Economics Division), Dublin.

OFFICIAL CORRESPONDENTS

Aden Protectorate:
The Senior Agricultural Officer, P.O. Box 1161, Aden.

Australia:
N. Hall, c/o Forestry and Timber Bureau, Canberra, A.C.T.

Bahamas:
The Director of Agriculture, Department of Agriculture and Marine Products, P.O. Box 28, Nassau.

Barbados:
The Director of Agriculture, Department of Science and Agriculture, P.O. Box 505, Bridgetown.

Basutoland:
The Director of Livestock and Agricultural Services, Agricultural Department, P.O. Box 24, Maseru.

Bechuanaland Protectorate:
The Director of Agriculture, Mahalapye.

Bermuda:
The Director of Agriculture, Department of Agriculture, Paget East.

British Guiana:
The Conservator of Forests, Forest Department, P.O. Box 249, Georgetown.

British Honduras:
The Conservator of Forests, Forest Department, P.O. Box 181, Belize.

British Solomon Islands Protectorate:
Chief Forestry Officer, Forestry Department, Honiara.

Brunei:
State Forest Officer, Brunei.

Canada:
V. H. Phelps, Forest Research Branch, Department of Forestry, Motor Building, 238, Sparks Street, Ottawa, Ontario.

Ceylon:
The Conservator of Forests, Kew Road, Colombo 2.

Federation of Malaya:
The Deputy Director of Forestry, Kuala Lumpur.

Fiji:
The Conservator of Forests, Forest Department, Suva.

OFFICIAL CORRESPONDENTS—*continued.*

Gambia:
THE FOREST SUPERINTENDENT, Yundum.

Ghana:
THE CHIEF CONSERVATOR OF FORESTS, Ministry of Food and Agriculture, P.O. Box 527, Accra.

Hong Kong:
THE FORESTRY OFFICER, Department of Agriculture, Forestry and Fisheries.

India:
THE PRESIDENT, Forest Research Institute and Colleges, P.O. New Forest, Dehra Dun, U.P.

Ireland, Republic of:
THE CHIEF INSPECTOR, Forestry Division, Department of Lands, 88, Merrion Square, Dublin.

Jamaica:
THE CONSERVATOR OF FORESTS, Forest Department, Kingston.

Kenya:
THE CHIEF CONSERVATOR OF FORESTS, P.O. Box 30027, Nairobi.

Leeward Islands, Antigua:
THE DIRECTOR OF AGRICULTURE, Department of Agriculture, Friars Hill.

Leeward Islands, St. Kitts-Nevis-Anguilla:
THE DIRECTOR OF AGRICULTURE.

Leeward Islands, Montserrat:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, The Grove.

Leeward Islands, British Virgin Islands:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, Tortola.

Malta:
THE DIRECTOR OF AGRICULTURE, Department of Agriculture, 53, Archbishop Street, Valletta.

Mauritius:
THE CONSERVATOR OF FORESTS, Curepipe.

New Zealand:
THE OFFICER IN CHARGE, N.Z. Forest Research Institute, Private Bag, Whakarewarewa, Rotorua.

Nigeria: Federal Government:
THE DIRECTOR OF FOREST RESEARCH, Private Mail Bag 5054, Ibadan, W. Nigeria.

Nigeria: Western Region:
THE CHIEF CONSERVATOR OF FORESTS, Western Region, Ministry of Agriculture and Natural Resources, Private Mail Bag No. 5007, Ibadan, W. Nigeria.

Nigeria: Northern Region:
THE SECRETARY, Research and Specialist Services, Regional Research Station, Samaru P.O., Zaria.

Nigeria: Eastern Region:
THE CHIEF INSPECTOR OF AGRICULTURE, Ministry of Agriculture, Enugu, E. Nigeria.

North Borneo:
THE CONSERVATOR OF FORESTS, P.O. Box 311, Sandakan.

Northern Rhodesia:
THE CHIEF CONSERVATOR OF FORESTS, P.O. Box 228, Ndola.

Nyasaland:
THE CHIEF CONSERVATOR OF FORESTS, P.O. Box 493, Limbe.

Pakistan:
THE INSPECTOR GENERAL OF FORESTS, Block No. 17/1, Pakistan Secretariat, Karachi.

St. Helena:
THE AGRICULTURAL AND FORESTRY OFFICER, Scotland.

Sarawak:
THE CONSERVATOR OF FORESTS, Forest Department, Kuching.

Seychelles:
THE DIRECTOR OF AGRICULTURE, Department of Agriculture, Victoria, Mahe.

Sierra Leone:
THE CHIEF CONSERVATOR OF FORESTS, New England, Freetown.

Somaliland Protectorate:
THE DIRECTOR, Department of Natural Resources, P.O. Box 9, Hargeisa.

Southern Cameroons:
THE CHIEF CONSERVATOR OF FORESTS, Forest Department, Buea.

Southern Rhodesia:
THE CHIEF COMMISSIONER, Southern Rhodesia Forestry Commission, P.O. Box 8111, Causeway.

Sudan, Republic of:
THE DIRECTOR, Forests Department, Ministry of Agriculture, P.O. Box No. 658, Khartoum.

Swaziland:
THE PRINCIPAL AGRICULTURAL OFFICER, P.O. Box 30, Bremersdorp.

Tanganyika:
THE CHIEF CONSERVATOR OF FORESTS, Forestry Department, P.O. Box 82, Morogoro.

Trinidad:
THE CONSERVATOR OF FORESTS, Forest Department, Long Circular Road, Port of Spain.

Uganda:
THE CHIEF CONSERVATOR OF FORESTS, Forest Department, P.O. Box 31, Entebbe.

Windward Islands, Dominica:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, Roseau.

Windward Islands, Grenada:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, St. Georges.

Windward Islands, St. Lucia:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, Castries.

Windward Islands, St. Vincent:
THE AGRICULTURAL SUPERINTENDENT, Department of Agriculture, Forestry and Fisheries, Kingstown.

Zanzibar:
THE DIRECTOR OF AGRICULTURE, Department of Agriculture, P.O. Box 159.

COMMONWEALTH AGRICULTURAL BUREAUX

FOREIGN CORRESPONDENTS

F.A.O.:
L. J. VERNELL, Assistant to Director, Forestry and Forest Products Division, F.A.O., Viale delle Termi di Caracalla, Rome.

Argentina:
I. COSTANTINO, Pueyrredon 2446, Buenos Aires.

Belgium:
M. HUET, Station de Recherches de Groenendael, Groenendael.

G. GILBERT, Section des Sciences de l'Institut National pour l'Étude Agronomique du Congo Belge, Brussels.

Denmark:
NIELS K. HERMANSEN, Den Kgl. Veterinaer- og Landbohøjskole, Skovbrugsafdelingen, Copenhagen.

Finland:
EINO SAARI, University of Helsinki, Helsinki.

France:
MAURICE MOTTE, École Nationale des Eaux et Forêts, 14, Rue Girardet, Nancy.

French North Africa:
Vacant.

Germany—W. German Federal Republic:
F. E. EIDMANN, Oberforstmeister Dozent, Napoleonsweg, Lintor, bei Düsseldorf.

Germany—Eastern:
A. RICHTER, Institut für Forstwissenschaft, Eberswalde.

Israel:
Vacant.

Italy:
A. DE PHILIPPIS, Istituto di Selvicoltura, Piazzale delle Cascine, Firenze.

Netherlands:
PROF. DR. IR. G. HELLINGA, "Hinkeloord", Generaal Foulkesweg 64, Wageningen.

Norway:
C. BONNEVIE-SVENDSEN, Det Norske Skogforsøksvesen, Vollebekk.

Spain:
M. NEIRA, Director, Servicio de Plagas Forestales, Marques de Mondejar 33, Madrid 2.

Sweden:
Vacant.

Switzerland:
ALFRED KURTH, Direktor, Eidg. Anstalt für das forstliche Versuchswesen, Birmensdorf bei Zürich.

Turkey:
ORHAN YAMANLAR, Istanbul Üniversitesi Orman Fakültesi Büyükdere, Istanbul.

U.S.A.:
G. M. JEMISON, U.S.D.A. Forest Service, Washington 25, D.C.

Yugoslavia:
R. A. BENIĆ, Forestry Faculty, P.O.B. 368, Zagreb.